

Remarks:

As filed, the Subject Application included claims 1-100. In response to a restriction requirement, Applicants elected, without traverse, claims 1-67, 79-84, 93, 94, 99 and 100 for further prosecution in the Subject Application. In the present Response, Applicants cancel non-elected claims 68-78, 85-92, and 95-98. Applicants address below each rejection and objection included in the office Action.

A. The Claims Rejections under 35 U.S.C. § 112

In Section 4 of the Office Action the Examiner rejects claims 1-19, 35, 80 and 81 under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner notes that claim 1, line 4, recites “at least one of peening and surface rolling”, while line 6 of that claim includes the language “after shot peening”. In the present response, claim 1 is amended to delete reference to “surface rolling”. Claim 1 is further amended to address the ambiguity identified by the Examiner in that claim.

The Examiner notes that claim 35, line 2, refers to “tempering the compact after sizing” and that the term “sizing” lacks antecedent basis. In the present response, claims 20-37 have been cancelled, thereby rendering this basis for rejection moot.

The Examiner notes that claims 80 and 81 do not provide units for the numbers “0.005” and “0.010”, respectively. In the present response, claims 80 and 81 are amended to include “inch” in connection with these units.

In light of the foregoing amendments and cancellation of claims, Applicants respectfully submit that the rejections under §112, second paragraph, should be withdrawn.

B. The Objection to Claims 18, 36 and 65

In Section 12 of the Office Action, the Examiner states objects to claims 36 and 65 as being dependent upon a rejected base claim, but noted that such claims would be allowable if rewritten in independent form including all of the limitations of their base claim and intervening claims. The Examiner further

states that claim 18 would be allowable if rewritten to overcome the above-discussed §112 rejection and to include all of the limitations of its base claim and any intervening claims.

In the present Response, Applicants have rewritten claim 18 as a new independent claim 101 including all of the limitations of its base and intervening claim. Applicants also have rewritten original claim 35, now cancelled, in and independent form, including the limitations of its base and intervening claim, as a new claim 102. Further, Applicants have rewritten original claim 65, including the limitations of its base and intervening claim, as a new claim 104. Applicants also add new dependent claim 103, dependent from claim 102.

Given the Examiner's conclusions in Section 12 of the Office Action, Applicants respectfully submit that each of new claims 101-104 should be passed to allowance.

C. The Claims Rejections under 35 U.S.C. §§ 102(b) and 103(a)

In paragraph 6 of the Office Action, the Examiner rejects claims 1-6, 9, 15, 17, 20-22, 25, 31, 34 and 35 under § 102(b) as being anticipated by U.S. Patent No. 4,121,927 to Lohman et al. ("Lohman"). Of those rejected claims, considering the cancellation herein of claims 20-37, claim 1 is the single independent claim.

In Section 8 of the Office Action, the Examiner rejects claims 7, 8, 10-14, 16, 23, 24, 26-30, 32, 33, 93 and 94 under § 103(a) as having been obvious over Lohman. Of these rejected claims: claims 7, 8, 10-14 and 16 ultimately depend from claim 1; claims 26-30, 32, and 33 have been cancelled; and claim 93 is an independent claim, from which claim 94 depends. As such, claim 93 is the single independent claim in the rejection of Section 8.

In Section 9 of the Office Action, the Examiner rejects claims 38-49, 51-64 and 66 under § 103(a) as having been obvious over Lohman in view of U.S. Patent No. 6,338,747 to Kosco ("Kosco"). Of those rejected claims, claims 38, 40, 51 and 66 are independent claims.

In Section 10 of the Office Action, the Examiner rejects claim 67 under § 103(a) as having been obvious over Lohman in view of Kosco, as applied to claim 66, and further in view of U.S. Publication No. 2003/01555041 to Bengtsson et al.

Finally, in Section 11 of the Office Action, the Examiner rejects claims 19, 37, 79, 99 and 100 under § 103(a) as having been obvious over Lohman in view of Kosco. The single independent claim included in this basis for rejection is claim 99.

Either the sole basis or the foundational reference for each of the foregoing rejections is the Lohman reference. Lohman is directed to making hard tool steel articles using powder metallurgy techniques. Given this objective, the techniques described in Lohman utilize highly alloyed gas-atomized metal powders useful for fabrication of tooling. For example, col. 3, lines 39-41 of Lohman refers to "compacts which are intended for use as a tool, for [] example as a gear hob, tool bit and the like." Similarly, in the discussion of Lohman's Example No. 1, at column 4, lines 47-48, the patent states that "the resulting tool steel is capable of being used as gear hobs, cutters, mills and the like." Also, each of the examples in Lohman refers to powder metal materials that are highly alloyed and, accordingly, the materials are produced from high-alloy powder metal compositions. For example, individual powder mixes described in Lohman includes a substantial percentage of alloying ingredients, in addition to balance iron. For example, in Lohman:

- the metal powder described in Example No. 1 includes more than 12 weight percent of alloying elements, balance iron;
- the metal powder described in Example No. 2 includes more than 18 weight percent alloying elements, balance iron;
- the metal powder described in Example No. 3 includes more than 16 weight percent alloying elements, balance iron; and
- the metal powder described in Example No. 5 includes more than 25 weight percent alloying elements, balance iron.

In contrast, the Subject Application describes methods utilizing low-alloy iron-containing powder metal compositions and mixes. Such powder metal compositions would not be suitable for fabricating the gear hobs, tool bits, and other tooling that is the objective of Lohman. To reinforce this significant distinction, each of independent claims 1, 40, 51, 66, 79, 84, 93, and 99 of the Subject Application is amended herein to recite that a compact or part is formed from a "low-alloy iron-containing" powder metal composition. It is understood that "low-alloy" powder metal compositions are those including no more than a total of 8 weight percent of alloying elements. Those alloying elements may be selected from, for example, nickel, molybdenum, chromium, vanadium, tungsten, manganese, copper and phosphorous, but the total of alloying additions cannot exceed 8 weight percent. It is evident that there is substantial support in the Subject Application for such an amendment to the foregoing independent claims. For example, each of the following powder metal materials discussed in the Subject Application as being useful in the methods described and claimed in the Subject Application includes less than 8 weight percent alloying elements, balance iron: Quebec Metal Powders powder types Atomet 1001, Atomet 4201, Atomet 4401, Atomet 4601, and Atomet 4701; Hoeganaes metal powder types 1000 and 1000B; Höganäs metal powder types 85 HP, 150 HP, Astaloy A, Astaloy B, Astaloy CrL, and Astaloy CrM; and Kobelco powder types 300MA 500MA.

As such, Lohman is directed to methods involving starting materials and, consequently, final powder metal materials that basically and substantially differ in composition from the starting materials and powder metal materials of the methods recited in amended claims 1, 40, 51, 66, 79, 84, 93, and 99 of the Subject Application. Lohman does not disclose or suggest the use of low-alloy starting powders, nor would it do so given Lohman's objective of producing tooling. Similarly, Lohman does not disclose or suggest producing low-alloy final products. The essential focus of Lohman is distinctly different from that of the methods and other inventions described in the Subject Application.

Given that Lohman does not disclose or suggest methods of processing low-alloy iron-containing powder metal compositions, and neither discloses nor suggests producing low-alloy powder metal products useful, for example, in structural applications and other applications distinct from the tooling applications described in Lohman, the Examiner's rejections under §102(b) and § 103(a) discussed above should be withdrawn. It follows that the rejections of the remaining claims, each of which directly or ultimately depends from one of claims 1, 40, 51, 66, 79, 84, 93, and 99, also should be withdrawn.

Conclusion:

Applicants respectfully submit that all of the claims under examination are in condition for allowance. Applicants' response should not in any way be taken as acquiescence to any of the specific assertions, statements, etc., presented in the Office Action not explicitly addressed herein. Applicants reserve the right to specifically address all such assertions and statements in subsequent responses.

Applicants have made a diligent effort to properly respond to the Office Action and hereby traverse all rejections presented. If the Examiner has any remaining concerns, the Examiner is invited to contact the undersigned at the telephone number set forth below so that such concerns may be expeditiously addressed. Accordingly, Applicants earnestly request reconsideration and withdrawal of all rejections and further earnestly request allowance of all claims under examination.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Mark R. Leslie", is positioned above a horizontal line.

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